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UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
MEHRA, INDER P

ART UNIT	PAPER NUMBER
2666	

DATE MAILED: 04/02/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 July 2003* .

2a)☒ This action is **FINAL.** 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24,26 and 28-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *26* is/are allowed.

6)☒ Claim(s) *1-7,9-17,19,20,22-24 and 28-30* is/are rejected.

7)☒ Claim(s) *8,18 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 September 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . 6) ☐ Other: .

Response to Amendment

1.   This is in response to an amendment dated 2/18/03 which has been fully considered and

made of record. Based on this amendment, claims 1, 7, 11, 15, 17, 20, 22 (amended thrice),

claims 2-3, 6, 9-10, 13-14, 16, 18, 21, 26 and 28-30 (once), claims 4-5, 8, 12, 19, 23-24

(amended twice), have been amended. Claims 25 and 27 (27 previously added in amendment A)

have been cancelled. Claims 1-24, 26, and 28-30 are now pending.

2.   Applicant has not argued the art rejection detailed in "FINAL" office action dated

10/3/00.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4.   Claims 1, 10-12, 14, 22-23 and 28-29 are rejected under 35 U.S.C. 102() as being

anticipated by **Hamilton et al** (US Ptent No. 6,392,993), hereinafter Hamilton.

For claims, 1, 11-12, 22, and 28-29, Hamilton discloses, " a method for error recovery

(refer to col. 19 lines 57-67, congestion control and transmission control in a data

communication, refer to abstract, col. 1 lines 24-31, col. 31 lines 12-17, comprising :

-   a communication link between a transmitter and the receiver being established

    through a TCP handshake, col. 1 lines 46-53 and col. 8 lines 39-45;

- a communication window set to an initial length (transmission rate), refer to col. 15 lines 30-35 and col. 31 lines 50-51;

- transmitting data packets from the transmitter to the receiver, abstract (lines 3-4), col. 2 lines 44-48;;

- detecting a missing packet at the receiver, as recited by claims 1, 11-12, and 22, refer to col. 19 lines 57-67 and col. 31 lines 19-23; setting a timer (NAK wait timer is started), refer to col. 19 lines 57-59;

- sending a negative acknowledgment from the receiver to the transmitter for the missing data packet, refer to col. 13 lines 23-24, col. 31 line 65 and col. 32 lines 29-34;

- where the missing packet is not received at the receiver in response to the negative acknowledgment before expiry of missing –packet timer, sending a further negative acknowledgment, recited by claim 23, refer to col. 20 lines 10-11;

- decreasing at the transmitter, the length of the congestion window in response to receipt of negative acknowledgment, refer to col. 16 lines 20-37;

- re-transmitting the missing packet. Refer to col. 3 line 60, col. 14 lines 13-18.

For claim 10, Hamilton discloses, in reference to fig. 1, the data communications network is an internet, refer to col. 6 line67.

For claim 14, Hamilton discloses missing packet received within designated time and the

timer value being reset (the missing packet timer is cleared upon receipt of the missing packet at

the receiver), refer to col. 24 lines 32-33.

For claim 23, Hamilton discloses NACK timer 152 (missing-packet timer) upon the

expiry of which a final negative acknowledgment is sent to the transmitter, refer to col. 20 lines

10-11.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

6.   Claims 2, 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Hamilton as applied to claims 1, 11 and 22 above, and further in view of **Sen et al** (US Patent

No.6,208,620), hereinafter, Sen.

For claims 2, 9 and 13, Hamilton discloses all the limitations of a subject matter in claims

1 and 11, as mentioned in paragraph 6 above, with the exception of the limitation, "wherein up

to four duplicate negative acknowledgments are sent from the receiver", as recited in claims 2, 9

and 13;

Sen discloses radio link protocol (RLP) three NACKS and continues until N attempts

have been made (up to four--- NACKS are sent), refer to col. 5 lines 4-5.

It would have been obvious to a person of ordinary skill in the art at the time of the

invention to use the capability of increasing multiplicity of NACKs, as taught by Sen. The

NACKs are integrated (combined) into the receiver. The suggestion/motivation to do so would

have been to ensure the re-transmission of packets by sender to receiver.

7.   Claims 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Hamilton** as

applied to claims 1, 11 and 22 above, and further in view of **Gersht et al** (US Patent No.

6,405,257), hereinafter, Gersht.

For claims 3, Hamilton discloses all the limitations of a subject matter in claims

1, as mentioned in paragraph 6 above, with the exception of the limitation, "wherein the

congestion window is halved at step v of claim 1 (decreasing the length of congestion window in

response to the negative acknowledgment)"; Hamilton discloses , " reducing the transmission

rate in response to Nack rates being high, refer to col. 16 lines 20-37;

Gersht discloses reduces the congestion window size by half each time source node

receives a congestion indicator (wherein the congestion window is halved), refer to col. 35-43;

It would have been obvious to a person of ordinary skill in the art at the time of the

invention to use the capability of reducing the size of window to half in response to NACK. The

NACKs are integrated (combined) into the receiver, whereas the size of window is combined

with the transmitter or sender. The suggestion/motivation to do so would have been to avoid

congestion.

8.   Claims 4-6, 15-16, 19, 25 and 30, are rejected under 35 U.S.C. 103(a) as being

unpatentable over **Hamilton,** as applied to claims 1, 11 and 22 above, in view of **Kumar** (US

Patent No. 6,269,080).

For claims 4-6, 15-16, 25 and 30, Hamilton discloses all the features of the subject

matter and claim limitations of claim 15 with the exception of the limitation," setting a round-trip

timer at the transmitter upon sending the packet ; determining the round-trip time, recited by

claim 16, and "increasing the congestion window if no negative acknowledgment for the missing

packet is received before expiry of the round trip timer"; and congestion window is doubled, as

recited by claim 6;

Kumar discloses setting a round-trip timer at the transmitter upon sending the packet, as

recited by claims 4 and 15; and "increasing the congestion window if no negative

acknowledgment for the missing packet is received before expiry of the round trip timer, as

recited by claims 5 and 15, fig. 12 B steps 1252 and 1257, and col. 14 lines 8-14 and col. 14 lines

33-37; determining the round trip time (Tsub.2), refer to col. 9 lines 60-62, and congestion

window is doubled, as recited by claim 6, refer to col. 14 lines 33-36;

It would have been obvious to a person of ordinary skill in the art at the time of the

invention to use the capability of increasing the time of window (timer) . The round trip timer

can be implemented by combining the timer in the sender 108 of network 104 as taught by

Hamilton , refer to fig. 6. The suggestion/motivation to do so would have been to increase the

duration of the round-trip timer to wait for Nack resulting in less traffic of NACKs in the

network.

For claim 19, Hamilton discloses, increasing the congestion window includes the step of

multiplicatively increasing the congestion window if no negative acknowledgment for the

missing packet is received before the expiry of the round trip timer, col. 16 lines 20-37.

9.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Hamilton,** as

applied to claims 1, 11 and 22 above, in view of **Natarajan et al** (US Patent No. 6,538,988),

hereinafter, Natarajan.

For claim 7, Hamilton discloses all the features of subject matter and limitations of claim

7, including re-transmitting the missing packet. refer to Hamilton's col. 3 line 60, col. 14 lines

13-18, with the exception of, *"sending a keep-alive request from the transmitter to the*

receiver, and setting—— time-out timer to detect a----- time-out; *responsive to keep-alive*

request;

Natarajan discloses, in reference to figs. 1 and 2, *sending a keep-alive request 231 from*

the transmitter to the receiver, and setting------a time-out timer 223 to detect a re-

*transmission time-out, ; responsive to keep-alive request 232;*step 243 of fig. 2, refer to col.5

line 21, col. 5 lines 25-27and col. 3 lines 34-67 and col. 8 lines 38-41, col. 10 lines 15-20 ;

It would have been obvious to a person of ordinary skill in the art at the time of the

invention to use the capability of sending keep-alive request message and also setting time-out

timer from sender to receiver. The time-out timer, which is located (combined) at the sender, is

initiated by the sender at the time of sending keep-alive request message to receiver The

suggestion/motivation to do so would have been to test the status of communication between

sender and receiver in order to avoid congestion in the network.

10.   Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Hamilton,** in

view of **Kumar,** as applied to claims 4, 6 and 15 above, further in view of **Dudley et al** (US

Patent (5,754,754), hereinafter, Dudley.

For claim 17, Hamilton and Kumar disclose all the features and limitations of subject

matter of invention in the claim 17 with the exception of, "the step of sending a round trip time

update request to the receiver". Hamilton discloses the receiver being responsive to the missing

packet, refer to col. 15 lines 4-5; and *"timers be set based on update requests generated by every*

node", refer to col. 2 lines 60-63;

Dudley discloses the step of sending a round trip time update request to the receiver, refer

to col. 9 lines 22-36;

It would have been obvious to a person of ordinary skill in the art at the time of the

invention to use the capability of sending a round-trip time update request to the receiver as

taught by Dudley. The round trip timer which is located (combined) at the sender. The

suggestion/motivation to do so would have been to determine the time of round-trip

communication between sender and receiver in order to avoid congestion in the network.

11.   Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Hamilton,** and

further in view of **Kumar** (US Patent No. 6,269,080), as applied to claims 4-6 and 15 above,

further in view of **Natarajan et al** (US Patent No. 6,538,988), hereinafter, Natarajan.

For claim 20, both Hamilton and Kumar disclose all the features of subject matter and

limitations of claim 20, including re-transmitting the missing packet. refer to Hamilton's col. 3

line 60, col. 14 lines 13-18, with the exception of, *"sending a keep-alive request from the*

transmitter to the receiver, and setting—— time-out timer to detect a—— time-out; responsive

to keep-alive request;

Natarajan discloses, in reference to figs. 1 and 2, *sending a keep-alive request 231 from*

the transmitter to the receiver, and setting——a time-out timer 223 to detect a re-

transmission time-out, ; responsive to keep-alive request 232; refer to col.5 line 21 and col. 3

lines 34-67 and col. 8 lines 38-41, col. 10 lines 15-20 ;

It would have been obvious to a person of ordinary skill in the art at the time of the

invention to use the capability of sending keep-alive request message and also setting time-out

timer from sender to receiver. The time-out timer is located (combined) at the sending and

initiated by the sender at the time of sending keep-alive request message to receiver The

suggestion/motivation to do so would have been to test the status of communication between

sender and receiver in order to avoid congestion in the network.

12.   Claims 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Hamilton as applied to claims 1, 11 and 22 above, and further in view of **Chien et al** (US Patent

No. 5,815,667), hereinafter, Chien.

For claims 24 and 27, Hamilton discloses all the features of the subject matter of the

invention in claim 24 dependent upon claims 22, and 27, as applied to claims 1, 11 and 22 above

with the exception of the limitation, *"the means for adjusting responding to expiry of the re-*

transmission time-out timer";

Chien discloses modify the time-out function after time-out and re-transmission *(the*

means for adjusting responding to expiry of the re-transmission time-out timer), refer to col. 6

lines 40-55.

It would have been obvious to a person of ordinary skill in the art at the time of the

invention to use the capability of modifying the time-out function after time-out and re-

transmission. The time-out timer is located (combined) at the sending and initiated by the sender

at the time of re-transmission of message to receiver. The suggestion/motivation to do so would

have been to improve the efficiency of the data packet transference between sender and receiver

in order to avoid congestion in the network.

Allowable Subject Matter

13.   Claims 8, 18, 21 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the base

claim and any intervening claims.

14.   Claim 26 is allowed.

Response to Arguments

15.   Applicant's arguments filed with respect to claims 1-24, 26, and 28-30 have been fully

considered but they are not persuasive.

Applicant has not argued or commented on the "FINAL" office action dated 10/3/03.

Following arguments are as detailed in the "FINAL" office action.

traffic generated by TCP. Hamilton neither discloses nor suggests that a transmitter and a

receiver communicate with each other using TCP.

In response, it is stated that these limitations, as such, are not recited in the claims 1, 11,

15, 22, and 26. However, Hamilton discloses a communication link between a transmitter and the

receiver being established through a TCP handshake, col. 1 lines 24-31, col. 31 lines 12-17.

Applicant argues that Hamilton does not disclose that a receiver is unresponsive to any

packets from the transmitter unless the receiver detects the missing packet, as recited in claims 1,

11, and 22.

In response, it is stated that Hamilton discloses, "NACk for missing packets only", refer

to col. 20 lines 50-52, col. 13 lines 23-24.

Applicant argues that Hamilton does not disclose nor suggests sending a *first* NACK and

sending *a second* NACK when the missing packet is not received before expiry of the missing

packet timer, as recited in claims 11 and 29.

In response, it is stated that "a first NACK" as well as "second NACK" are not supported

by specifications, refer to page 4 lines 25-29. Specifications disclose "a further negative

acknowledgement", refer to page 4 line 29. Hamilton discloses, "when missing packet is not

received at the receiver or gap in sequence is detected, NACK timer is transmitted to the sending

system when appropriate NACK has expired, refer to col. 20 lines 9-11.

Applicant argues that Hamilton does not disclose nor suggests adjusting a TCP congestion window in response to receipt of the negative acknowledgement, and expiry of the round trip timer as recited in claim 22.

In response, it is stated that Hamilton discloses pacing algorithm adjusting the transmission rate (window adjustment), refer to col. 16 lines 25-30.

Applicant argues that Hamilton does not disclose that a receiver is responsive to only to missing packets and keep alive request , as recited in claim 20.

In response, it is stated that Hamilton discloses, "NACk for missing packets only", refer to col. 20 lines 50-52, col. 13 lines 23-24. Further, Natrajan discloses, "responsive to the keep-alive REQUEST message", refer to col. 5 lines 20-30, col. 3 lines 34-67, col. 8 lines 38-41 and col. 10 lines 15-20.

Applicant argues that Chien doe not disclose nor suggests means for adjusting a TCP congestion window in response to receipt of the NACK-------time–out timer, as recited in claim 24.

In response, it is stated that Chien discloses the means for adjusting responding to expiry of re-transmission time-out timer (**changing threshold for improved efficiency of data packet transference**), refer to col. 6 lines 40-55.

In light of above explanation, Applicant's arguments are not persuasive.

Conclusion

15.   Any enquiry concerning this communication should be directed to Inder Mehra whose

telephone number is (703) 305-1985. The examiner can be normally reached on Monday through

Friday from 8:30AM to 5:00 PM.

If attempt to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Seema

Rao , can be reached on (703) 308-5463. Any enquiry of a general nature of relating to the status

of this application or processing should be directed to the group receptionist whose telephone

number is (703) 305-4700.

16.   Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC. 20231

Or faxed to (703) 872-9314.

Hand –delivered responses should be brought to Crystal Park II, 2121 Crystal drive,

Arlington, VA, sixth floor (Receptionist).

Inder Mehra

April 1, 2004